STORMS AND WEATHER WARNINGS

WASHINGTON FORECAST DISTRICT

There were no gales along the Atlantic or east Gulf coasts during the first 10 days of the month, although storm warnings were issued for the region from Sandy Hook, N. J., to the Virginia Capes on the 2d. On the morning of the 11th a disturbance was central over West Virginia and moving east-northeastward with increasing intensity. Anticipating a further increase in both intensity and extent, storm warnings were ordered displayed from Jacksonville, Fla., to Eastport, Me. This storm was attended by west and northwest gales from Cape Hatteras to Cape Cod, the highest velocity reported being 46 miles an hour from the northwest at Cape Henry, Va.

The next warnings were issued for the north Atlantic coast from Sandy Hook, N. J., to Eastport, Me., in connection with a disturbance that moved rapidly down the St. Lawrence Valley. However, the only wind of gale force reported was 38 miles from the southwest at Eastport, Me. Again, on the morning of the 23d warnings were displayed from Delaware Breakwater to Eastport, Me., because of the rapid advance of a disturbance of considerable intensity that at that time was central over western Lake Erie. This disturbance diminished in intensity, however, during the day, and no winds of gale force were reported.

By far the most severe storm of the month was that of the 26th in the Northeastern States. This disturbance moved eastward along the northern border with gradually increasing intensity until the morning of the 26th, when it was centered over southwestern Quebec. At this time, a secondary was developing over southern New York, and it moved rapidly northeastward, gaining great strength during the day, and at 8 p. m. was centered near Eastport, Me., where the barometer read 28.84 inches. Westerly gales prevailed throughout the lower Lake region, upper Ohio Valley, and in the Middle Atlantic and North Atlantic States. The highest wind velocity reported was 72 miles an hour from the west at Buffalo and New York City. Northwest storm warnings were displayed from Cape Hatteras to Cape Cod at 9 a. m. and north of Cape Cod to Eastport at noon of the 26th. No strong winds occurred before the passage of the storm center, inasmuch as the pressure gradient to the eastward was slight.

There were no general cold waves during February and only three of quite limited extent. The first of these was in the northern portions of Maine, New Hampshire, and Vermont during the 1st–2d; the second was in the southern Appalachian region during the 11th–12th; and the last in northern New England and northern and central New York during the 26th–27th. Cold-wave warnings were issued on the 1st and 26th, but not on the 11th.

Frost warnings were issued for extreme northwestern Florida and the southern portions of Alabama and Mississippi on the 2d, 3d, 11th, 12th, 17th, and 26th, and for southern Georgia and all or part of northern Florida on the 3d, 11th, 12th, 18th, and 26th. The warnings were extended to central Florida on the 11th and to Miami on the 12th. The most important warnings were those of the 11th and 12th. Heavy to killing frost and freezing temperature occurred as far south as extreme northern Florida on the 12th, and to Orlando, Fla., on the 13th.—*C. L. Mitchell.*

CHICAGO FORECAST DISTRICT

With respect to comparative freedom from severe weather conditions, the month of February, 1925, in the Chicago Forecast District resembled its immediate predecessor, January. Furthermore, most of the month was unusually mild and dry, this being especially true in northwestern sections. Only one cold wave of consequence occurred, and, likewise, only one storm that could be classed as at all severe, visited Lake Michigan, where more or less navigation goes on throughout the winter.

Cold-wave warnings.—Cold-wave warnings were issued on but three days, namely, the 15th, 25th, and 28th. The first and last mentioned were for limited areas in the northwestern portion of the district, while that on the 25th embraced a considerable area in the middle Missouri and extreme upper Mississippi Valleys and Upper Lake Region. In most cases the cold waves occurred as forecast, but the warnings should have been extended over additional territory in some instances. At the very close of the month a new cold wave was about to sweep southward over the district.

Storms on Lake Michigan.—Several low-pressure areas crossed the Great Lakes region during the month, but only one disturbance attained the proportions of a storm. Advisory warnings were issued on the 1st, 8th, 18th, 20th, 22d, 24th, 25th, and 26th. The storm of the 25th–26th was rather severe. Not only did it increase greatly in intensity as it reached the Lake Region from the far Northwest, but conditions were accentuated because of the presence of a marked area of high pressure in its rear. West and northwest gales occurred in this connection over most of the lake.

Livestock warnings.—It was not necessary to issue any special advices for the benefit of livestock interests, and no inimical weather conditions are known to have occurred.

Special forecasts.—A special forecast as to temperature and snowfall was made for the benefit of the U. S. Army Air Service in connection with their winter maneuvers in Michigan near the middle of the month, and we learn that this proved to be of considerable assistance.—*C. A. Donnel.*

NEW ORLEANS FORECAST DISTRICT

Moderate conditions prevailed, without severe cold waves or storms. The only storm warnings were issued on indications of the p. m. map of the 26th, when a moderate depression over West Texas was advancing southeastward and a fairly steep barometric gradient extended to an area of high pressure over the Missouri Valley; northwest storm warnings were issued for the Texas coast but the winds did not reach verifying velocity. Small-craft warnings were displayed on the east coast of Texas on the 2d and on the Louisiana coast on the 27th.

Warnings for moderate cold waves were issued on the 1st for the northern portion of the district, on the 2d for Port Arthur and Houston, Tex., and on the 10th and 16th for the northwestern portion of the district except the north portion of west Texas. These warnings were mostly verified. Warnings issued on the morning of the 25th for a moderate cold wave in the northern portion of the district and at night on the 26th for Arkansas, East Texas, and the southeastern portion of West Texas, failed of verification in most parts of the areas named, the change to

colder being gradual in Oklahoma and mostly insufficient for a cold wave in East Texas. Warnings for livestock were included in most cold wave warnings.

Frost warnings for coast sections were issued on the 2d, 3d, 10th, 11th, 12th, and 17th, and were generally verified.—*R. A. Dyke.*

DENVER FORECAST DISTRICT

February was an unusually mild and dry month over the entire Denver district. While a number of LOWS of unusual intensity appeared during the first 12 days and again during the last week of the month over the Pacific Northwest, most of them moved eastward over the northern track without the usual development of secondary disturbances on the plateau, so common in the winter months. Most of the Canadian high-pressure areas passed eastward without affecting this district, except one that was drawn southward on the 25th and 26th by a LOW that moved directly southward from eastern Colorado into New Mexico, causing light precipitation in eastern Colorado on the night of the 26th. Precipitation occurred in Utah and western Colorado on the 6th–7th, attending a secondary LOW that developed over northern Arizona on the 6th and moved eastward across northern New Mexico. Another secondary developed over southern Nevada on the 20th and moved eastward across Utah and Colorado, attended by precipitation in the northwestern part of the district on the 20th and 21st.

On the morning of the 10th, with a LOW moving rapidly eastward across southern Missouri and a strong high-pressure area advancing southeastward from southern Idaho, warning was issued for a moderate cold wave in southeastern New Mexico, which occurred as predicted.—*E. B. Gittings, jr.*

SAN FRANCISCO FORECAST DISTRICT

There were two well marked storm periods in this district during the month. The first covered the first decade and the second the greater portion of the third decade and was mostly confined to the North Pacific States. Generous precipitation fell from central California and central Nevada northward with a fairly good amount of snow in the mountains. In southern California and southern Nevada the drought continued with but little abatement. In northern California the seasonal rainfall at the close of the month amounted to over 90 per cent of normal, while in southern California it was only slightly over 30 per cent.

The month opened with two large storm systems covering the north Pacific; (a) central about latitude 55 degrees north and longitude 140 degrees west, and (b) in latitude 45 degrees north and longitude 170 degrees east. These storms while closely following one another, maintained their individuality, and passed inland in series of small storms with greatly diminished intensity; the last of which entered the continent on the 12th. On the 6th, a large area of high pressure appeared over Midway Island and extended rapidly north and east following the storm (b). On the 9th, the area of high pressure was central in latitude 35 degrees north, and longitude 165 degrees west, with a ridge extending northward over central Alaska. At this time another storm (c) appeared over Bering Sea, and the storm (b) was central in latitude 41 degrees north and longitude 138 degrees west and had reached its maximum intensity. The motor-ship *Aorangi* passing near its center reported a barometer reading of 28.62 inches and a gale of 70 miles per hour. This storm passed inland on the 12th, with greatly diminished intensity and a minimum barometer reading of 29.68 inches.

From the 13th, until the 19th, the Pacific area of high pressure dominated the weather in this district, and fair and pleasant weather prevailed. On the evening of the 19th the storm (c), which first appeared in Bering Sea on the 9th, began to affect the weather on the northern coast, and by the evening of the 20th it had caused precipitation over the entire district, which continued with slight intermittence over the northern and central portions until the 25th. On the 23d an area of high pressure off the southern California coast moved rapidly northeastward and increased greatly in intensity as it neared the coast. By the 24th it had covered the entire Pacific slope and adjacent ocean and gave fair and warm weather after the 25th, except for light rain in the North Pacific States on the 27th.—*G. H. Willson.*

RIVERS AND FLOODS

By H. C. FRANKENFIELD

Reference to the table at the end of this report will show that, with the exception of the flood in the Sacramento River of California, the floods of February, 1925, were not of severe character, and while they were quite numerous and widely scattered, none occurred in the great rivers of the country. Neither were there any in the South Atlantic States, except the aftermath of the great floods of January.

The floods in the Connecticut, Susquehanna, and Hudson Rivers were caused by the melting of quite deep snows attended by some rains and by the formation and subsequent breaking up of ice gorges.

The floods in the Sacramento River and its tributaries were of more decided character. The following general description was summarized from the comprehensive report of Mr. N. R. Taylor, the official in charge of the Weather Bureau office at Sacramento:

On the morning of February 5, 1925, general rains were in progress throughout the drainage basin of the Sacramento Valley, and on that night torrential rains occurred from the foothills to the highest altitudes of the Sierras, melting some of the snow that had accumulated above the 6,000-foot level. By the morning of the 6th all mountain streams were running bank full; the American River at Folsom and thence well up into its forks was higher than at any time since the big floods of 1909, and the Sacramento River at Sacramento had risen to a stage of 26 feet and was still going up. * * *

By early forenoon of the 6th the situation in Sacramento was becoming serious in that the water of the Sacramento River was backing up to the north of the mouth of the American River into the lower portions of North Sacramento, which was rapidly becoming flooded. Early in the afternoon of this date a small levee near the Southern Pacific Railroad bridge broke and increased the spread of the water, which finally occupied some two square miles or so of territory. At about 11:45 a. m. of the 6th some 20 units of the 48 units which comprise the Sacramento by-pass were opened, which deflected about a 4-foot head of water from the Sacramento River, some 3 miles above the mouth of the American, into Yolo Basin, and in the meanwhile, a considerable amount of water was pouring through Fremont Weir, which also leads into Yolo Basin. * * *

At about 1 p. m. of the 7th the river at Bensons Ferry crested at 12.9 feet, 0.1 foot below the stage predicted, but even before reaching this point a number of levees, which had been damaged by beavers, broke and some 2,000 acres of land were flooded in the lower reaches of the Mokelumne and Cosumnes Rivers. * * *

By the morning of February 7 the Sacramento River at Colusa had crested at a stage of 22 feet and by 8 a. m. of the 9th a stage of 17.9 feet, 0.1 foot below the flood stage which was predicted, was recorded at Knights Landing. After the 8th there was a slow but steady fall in all streams.

On the night of February 10, 1925, or about the time the rivers had subsided to safe stages, unusually heavy rains began falling